Dissolved Oxygen / TMDL

ISSUE

The 1998 Feasibility Report for the Savannah Harbor Expansion Project predicted that deepening the navigation channel would adversely impact dissolved oxygen levels in the harbor. Construction costs were included in the Project to mitigate for that adverse impact. At that time, GPA committed to remove (mitigate) any incremental impact the Project may have on dissolved oxygen levels in the harbor.

The level of dissolved oxygen in the harbor is an important issue. Coastal waters in the Southeast typically decrease in their level of dissolved oxygen during the summer months. In Savannah Harbor, these levels usually drop below those that are generally accepted as being necessary for healthy fishery populations.

Georgia DNR-EPD has classified the harbor as "coastal fishing" waters. The harbor is the only location in Georgia with that classification. The State has included the harbor on their Section 303(d) list as an impaired water because of the repeated failure of dissolved oxygen levels in the harbor to meet the water use criteria established for that area.

Since the harbor is on the Section 303(d) list, the state is required to act to improve its quality, specifically the level of dissolved oxygen. Because of its responsibility in oversight of the Clean Water Act, EPA was sued by the Sierra Club because of the slow progress being made in improving the quality of waters that are on the Georgia Section 303(d) list.

EPA has disapproved the Georgia state standard for dissolved oxygen for the harbor as part of its response to that lawsuit. EPA also began to establish a Total Maximum Daily Load allowed for dissolved oxygen for the harbor. It released a draft TMDL for public comment in August 2004.

RELATIONSHIP WITH OTHER DISTRICT STUDIES

Savannah District is conducting the Savannah Harbor Ecosystem Restoration Study, with the City of Savannah as the local sponsor. That study is investigating ways of improving dissolved oxygen levels in the harbor. The City represents a group of industries with point source discharges in the harbor that can affect dissolved oxygen. Those industries banded together as the Harbor Committee of the Chamber of Commerce.

The SH Ecosystem Restoration Study has conducted studies that have been used in the SH Expansion Project. That work has consisted primarily of (1) the "Savannah Harbor Wastewater Characterization Study" of the point source dischargers, which was used in the development of the hydrodynamic and water quality models, and (2) the "Identification and Screening Level Evaluation of Methods to Improve Dissolved Oxygen Levels in Savannah Harbor", which will be used for identifying the best method of mitigating for Project-induced impacts to dissolved oxygen.

PROJECT ACTIONS

The SH Expansion Project will use state-of-the-art 3-dimensional hydrodynamic and water quality models to identify potential impacts to water quality, including dissolved oxygen.

The Project has formed an interagency team to coordinate on the evaluation of potential impacts to water quality, including dissolved oxygen. That team is comprised of representatives of EPA, USFWS, NMFS, GA DNR-EPD, and SC DHEC. That team includes technical specialists within those agencies that evaluate impacts that potential projects may have on water quality. We have used the team to identify input and output conditions for the model runs that will be conducted to evaluate impacts to water quality.

At present the Georgia water quality standard for dissolved oxygen has been disapproved, but a replacement has not yet been promulgated. Because of the uncertainty that exists until a new standard is established, the Project will evaluate its effects on both the existing GA D.O. standard and the most recent one proposed by EPA in its work on the TMDL for the harbor. We will also evaluate the Project effects using the SC D.O. standard.

POTENTIAL FUTURE EVENTS

The SH Ecosystem Restoration Study is evaluating methods of improving dissolved oxygen levels in the harbor. That study is scheduled to be complete in FY07, at which time a report will be sent up through the Corps for Congressional authorization. Assuming that study continues on schedule, it will identify the most cost-effective way to improve D.O. and recommend some construction. The SH Expansion Project will agree with the method identified in the SH Ecosystem Restoration Study and include some similar construction as mitigation for the incremental effects of a harbor deepening. Essentially, the SH Expansion Project will include as a project cost, funds to construct and operate an increment of the same dissolved oxygen improvement design that is identified and recommended in the SH Ecosystem Restoration Study.

The improvement recommended by the SH Ecosystem Restoration Study will likely address the cumulative effects that previous harbor improvements have had on dissolved oxygen levels in the harbor, specifically the reaeration capacity that has been lost as the channel has been deepened over the last 150 years. If the Federal government accepts financial responsibility for the adverse impacts that previous improvements to the Savannah Harbor Navigation Project have caused, Congress could modify the SH Navigation Project by including a feature to mitigate for those adverse impacts.

At present, we expect EPA to issue another Draft TMDL using the enhanced hydrodynamic and water quality models. They will likely finalize the TMDL in late 2006 or 2007. This should have no effect on the SH Expansion Project, as we intend to fully replace any reduction in reaeration capacity that may result from a deeper channel.